1. INTRODUCTION

The Ballona Wetlands is an ecological treasure within urban Los Angeles County. The project area includes 600 acres of open space, including coastal wetlands and adjacent habitat. It is estimated that coastal wetlands in Los Angeles County have been reduced by 96% compared with pre-development conditions (Hendrickson, 1991a). The Ballona Wetlands is the largest wetland restoration project in Los Angeles County and offers an important opportunity to help restore regionally limited habitats while also providing opportunities for the public to experience these environments.

1.1 BALLONA WETLANDS PROJECT AREA

The Ballona Wetlands Project Area includes 600 acres owned by the State of California: 540 acres owned by the California Department of Fish and Game (CDFG); and 60 acres owned by the State Lands Commission (SLC), including the 24 acre Freshwater Marsh. A portion of the site is in unincorporated Los Angeles County and the rest is in the City of Los Angeles. As discussed in this report, the Ballona Wetlands once occupied approximately 2000 acres, extending northwards from the bluffs. Remnant areas of that wetland complex include Del Rey Lagoon, Ballona Lagoon, Marina Del Rey, and the Venice Canals. These areas are not the primary focus of the restoration planning effort, but are considered in this report to give a landscape context.

In previous studies, part of the wetlands have been divided into three areas designated as Areas A, B, and C as shown in Figure 1-1. This nomenclature will be continued to allow cross-reference with previous work. A description of each of these areas is provided below.

1.1.1 Area A

Area A is approximately 139 acres in size and lies north of Ballona Creek, west of Lincoln Boulevard and south of Fiji Way. Elevations range between approximately nine and 17 feet relative to mean sea level (MSL); fill was placed on Area A during the excavations of Ballona Creek and Marina Del Rey. Area A is undeveloped with the exception of a parking area along the western boundary and a drainage channel along the northern boundary. In addition, the Gas Company currently maintains four monitoring well sites in the western end of this area.

1.1.2 Area B

Area B, approximately 338 acres in size, lies south of Ballona Creek and west of Lincoln Boulevard. Area B extends south to Cabora Drive, a utility access road near the base of the Playa Del Rey Bluffs. To the west, Area B extends into the dunes that border homes along Vista Del Mar. Elevations across Area B range between approximately two and five feet MSL in the lower flat portions, and up to 50 feet MSL below the Del Rey Bluffs. Area B contains the largest area of remnant unfilled wetlands with abandoned agricultural

lands to the southwest, and the Freshwater Marsh to the northeast. The Gas Company has easements for oil wells, one of which is active, and supporting access routes in Area B.

1.1.3 Area C

Area C is north of Ballona Creek and east of Lincoln Boulevard in the City of Los Angeles. The Marina Freeway forms the northeastern border of Area C. The area is approximately 66 acres in size and is traversed in an east-west direction by Culver Boulevard. Area C contains fill from the construction of the Ballona Creek flood control channel, and developments such as Marina Del Rey, the Pacific Electric Railroad, the raising of Culver Boulevard and the Marina Freeway. Elevations within Area C range from approximately 4.5 to 25 feet MSL. Area C is mostly undeveloped with the exception of the ball fields and supporting minor structures.

1.1.4 Freshwater Marsh

The Freshwater Marsh is located west of Lincoln Boulevard, and south of Jefferson Boulevard, adjacent to Area B in the City of Los Angeles. The Freshwater Marsh was constructed between 2001 and 2003. The Freshwater Marsh treats urban runoff and stormwater from the Playa Vista development (central inlet) and from Jefferson Boulevard (Jefferson inlet). It is operated and managed by the Ballona Wetlands Conservancy, a non-profit organization established for that purpose. A riparian corridor east of Lincoln Boulevard and outside of the project area is currently being constructed that will connect to the southern end of the Freshwater Marsh

1.1.5 Ballona Creek

CDFG owns the part of Ballona Creek that flows through the project area. The channel is trapezoidal, with bottom widths varying from 80 to 200 feet and depths varying from 19 to 23 feet from the top of the levee. The side slopes are lined with concrete, paving stones and riprap; the channel bottom is not armored.

1.2 BALLONA WETLANDS RESTORATION PLAN

The State Coastal Conservancy, Department of Fish and Game and the State Lands Commission are working with a wide range of stakeholders to develop a restoration plan for the Ballona Wetlands Project Area. The goals of the plan are to:

1. Restore, enhance, and create estuarine habitat and processes in the Ballona Ecosystem to support a natural range of habitats and functions, especially as related to estuarine dependent plants and animals.

2. Create opportunities for aesthetic, cultural, recreation, research and educational use of the Ballona Ecosystem that are compatible with the environmentally sensitive resources of the area.

PWA has been hired as a technical consultant to assist in the development of the Ballona Wetlands Restoration Plan. Working with the state agencies and all other stakeholders, PWA will help to:

- Characterize the existing conditions within the project area;
- Identify potential restoration alternatives based on the opportunities and constraints; and
- Develop a conceptual restoration plan.

The final product will be a conceptual restoration plan that achieves the project goals.

1.3 PURPOSE OF THIS REPORT

This report is a summary and synthesis of existing information about the project area. Historical conditions are considered to provide a baseline for understanding how the site has changed through time. Information that is not relevant to producing a conceptual restoration plan is not necessarily considered at this time. Some information will have to be gathered later for environmental review and permitting purposes as well as for detailed technical investigations necessary to move toward implementation of the restoration plan. The topic areas included in this report are:

- Regional and historic context
- Physical setting (soils and substrate, topography and bathymetry, hydrology)
- Biological resources (habitats and vegetation, invertebrates, fish, reptiles and amphibians, mammals, birds, sensitive/endangered species, invasive and nuisance species)
- Cultural resources
- Water and sediment quality (chemistry, toxicity)
- Land use (utilities, easements, access)
- Public access and recreation
- Transportation and circulation (traffic, bicycles, pedestrians)
- Regulatory framework

The information presented in this report will be used to evaluate site specific opportunities and constraints to achieve the project goals and objectives, such as where and how the site conditions support or constrain attainment of the project goals. Based on this analysis, it will be possible to identify potential restoration actions and to refine the project objectives. This process will be used to develop restoration options that will be analyzed for feasibility and developed into conceptual restoration alternatives.

1.4 REPORT SUMMARY

Physical Setting

Ballona Wetlands developed during the post-glacial rise in sea-level, from around 7,000 years ago. Before human development the lowland areas comprised a back-barrier lagoon with large areas of fringing saltmarsh. Post-colonization, the wetlands were progressively land-claimed by straightening of channels, construction of infrastructure and development of oil and gas fields. Dredged spoil from the excavation of Marina Del Rey raised the land surface elevation to above 15 feet MSL in places.

The project area is divided into Areas A, B and C. Area A occupies 139 acres to the north of Ballona Creek, bounded by Marina Del Rey to the west. This entire area has been filled with dredged materials to elevations up to 18 feet MSL and is drained by Marina Ditch at its northern boundary. Area B covers 338 acres to the south of Ballona Creek and is bounded to the south by Del Rey Bluffs. Much of this area remains unfilled and, with the exception of areas around oil and gas platforms, the ground surface represents the original marsh surface. The area is drained by a series of channel networks connected to tide gates at the Ballona Creek southern levee. Area B is dissected by several major roads and drainage bypasses these through a series of culverts. Area C occupies 66 acres and lies to the east of Area A. It has been filled to high levels by dredged materials, particularly in its southern part.

Biological Resources

A compendium of all wetland and upland vascular plants describes over 170 species present within Ballona Wetlands (Areas A, B, C), Del Rey Lagoon, Ballona Lagoon, Marina Del Rey, and Ballona Creek. Common species on the saltmarshes include pickleweed (*Sarcocornia pacifica* syn: *Salicornia virginica*) with subordinate salt grass (*Distichlis spicata*) and alkali heath (*Frankenia salina*). Saltmarsh vegetation is present in Areas A, B, and C, though most of the saltmarsh habitat in Areas A and C is non-tidal. The Freshwater Marsh is dominated by cattails (*Typha* spp.) and bulrushes (*Scirpus* spp.). Other freshwater habitat includes willow scrub in riparian corridors near to freshwater sources. Coastal dunes occur at the western end of Area B and comprise a mixture of pioneer and scrub-dominated dune habitat. Ballona Wetlands supports several special-status plant species.

Approximately 44 species of fish inhabit Ballona Wetlands, Ballona Creek and Marina Del Rey, and approximately 11 species are known to have historically inhabited these same areas. A common species in Ballona Creek is the cheekspot goby, with northern anchovy and queenfish in lower Marina Del Rey. In Area B, topsmelt was the most abundant fish. Round stingray and other fish are ooccasionally observed in the tidal channel in Area A. No special-status fish are known to inhabit Ballona Wetlands.

Numerous bird species are known to use Ballona Wetlands including shorebirds, wading birds, fish foragers and waterfowl, and several species of raptor, including several endangered species. A resident population of Belding's savannah sparrow, state-listed as an endangered species is present on Area B, and at least two other endangered species, the California least tern and peregrine falcon forage at Ballona Wetlands.

Cultural Resources

At least 14 prehistoric deposits have been identified in the vicinity of the project area, relating to environmental and cultural change adjacent to the wetlands over the last 6,500 years. These include a major mortuary complex east of Area B

Water Quality

The results of the available water quality monitoring in Ballona Creek indicate impacts from urban runoff and stormwater. Bacteriological indicators and several metals (dissolved and total lead and total copper) consistently exceed freshwater water quality objectives (WQO). Toxicity effects were observed in stormwater samples that may be associated with heavy metals and volatile organic compounds (no specific compound was identified). Water quality within the tidal section of Ballona Creek indicates similar water quality issues with regard to metals concentrations when compared to the salt water WQOs. Copper, lead and zinc exceeded these criteria in the samples collected, with greater exceedances reported for copper.

Sediment Quality

The results of the available data on sediment quality in the tidal section of Ballona Creek indicate exceedances of the criteria for copper, lead, and zinc, which are also detected at concentrations that exceed criteria in water samples in the creek and its tributaries. DDT and total detectable chlordane were also found to exceed sediment quality criteria. Sediment toxicity was identified as moderately toxic to the test organisms at one station and highly toxic at three stations. The samples from Ballona Creek provide an indication of potential long-term sediment quality of the marsh if the primary inputs are from the Creek. Concentrations of constituents in the Creek samples would be expected to be greater in the tidal section compared to the tidal marsh due to greater overall loading from the Ballona Creek watershed.

Land Use

California Fish and Game Commission recently designated a 577-acre portion of the project area as the Ballona Wetlands Ecological Reserve. Surrounding areas are predominantly urban and include marinas, roads, commercial and residential areas. The site is also near several parks and recreation areas as described including Del Rey Lagoon, Marina Del Rey, and the Ballona Creek Bike Path.

Public Access and Recreation

Ballona Wetlands offer an opportunity for public access and provision for recreational activities, including education, wildlife viewing, hiking and bicycling along several trails located through and around the periphery of the wetlands area.

Transportation and Circulation

Three primary roads pass into and through Ballona Wetlands, including Lincoln Boulevard, Jefferson Boulevard and Culver Boulevard. All three are significant roads and are classified as Major or Secondary Highways. Lincoln Boulevard is a major regional transportation route through the area. Culver Boulevard is the primary east-west road in the project area. In addition to the three roads, two transit routes pass through the project area and several other transit routes run adjacent to the area.

Regulatory Framework

Eleven regulations protecting sensitive resources within Ballona Wetlands are identified. These include the California and Federal Endangered Species Acts, sections of the Clean Water Act, National Historic Preservation Act, Title 14 of the California Code of Regulations, and sections of the California Fish and Game Code.

1.5 SECTION 1 FIGURES

figure 1-1

Ballona Wetlands Restoration

Project Area

Proj. # 1793

PWA